

REMARKS

CLAIMS 1, 2 and 5-18

In the Office Action of September 26, 2007, claims 1, 2, 5-14 and 18 were rejected under 35 U.S.C. §102(b) as being anticipated by Su et al. (U.S. Patent 5,418,717, hereinafter Su). Claims 15-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Su in view of Boman et al. (U.S. Patent 6,480,819, hereinafter Boman). Claims 32 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Su in view of Giustiniani et al. (U.S. Patent 5,230,037).

Independent claim 1 provides a method of identifying a semantic structure from a text. The method includes identifying semantic entities from the text and combining semantic entities to form at least two candidate semantic structures, each candidate semantic structure having at least one parent semantic entity and at least one child semantic entity. A semantic score is generated for each candidate semantic structure based on the probability of a child semantic entity given a parent semantic entity in the respective candidate semantic structure. A transition score is generated for each candidate semantic structure by generating a separate transition probability for each pair of semantic entities that appear on a same level in a candidate semantic structure wherein generating a transition probability comprises dividing a count of the number of times the pair of semantic entities appear in a particular order on the same level in training data by the number of times the entities appear on the same level in the training data. A syntactic score is generated for each candidate semantic structure based in part on the position of a word in the text and the position in the semantic structure of a semantic entity formed from the word. The syntactic score and the semantic score are combined for each semantic structure to select one of the candidate semantic structures for at least a portion of the text.

The amendments to claim 1 find support on page 20, line 14 to page 21, line 5 and page 22, line 4 to page 23, line 22. Further, the imitations of claims 32 and 33 have been incorporated into claim 1 and claims 32 and 33 have been canceled.

As amended, claim 1 is not shown or suggested in Su. In particular, Su does not generate a semantic score for each candidate semantic structure based on a probability of a child semantic entity given a parent semantic entity. In Su, the semantic scores provide the probability of a semantic structure given a syntactic structure or alternatively, the probability of semantic tags given a production rule and left and right contexts. There is no mention of a probability of a child semantic entity given a parent semantic entity. Similarly, Boman and Giustiniani do not show or suggest such a probability.

In addition, none of the cited references show or suggest a transition probability that is generated by dividing a count of the number of times a pair of semantic entities appear in a particular order on a same level in training data by a count of the number of times the entities appear on the same level in the training data. In column 15, lines 53-66 of Su, Su discusses determining a transition probability based on the frequency of occurrence of one phrase level being reduced from a known phrase level divided by the frequency of occurrence of any phrase level being reduced from the same known phrase level. This is not the same as, nor does it suggest determining a transition probability by dividing a count of the number of times a pair of semantic entities appears in a particular order on the same level by a count of the number of times the semantic entities appear on the same level.

In the Office Action of September 26, 2007, Giustiniani was cited as showing the training of a Markov Model using training data. Although Giustiniani discloses training a transition probability, this transition probability is not based on the number of times a pair of semantic entities appears in a particular order on a same level in a candidate semantic structure or based on the number of times the semantic entities appear on the same level. Since neither Giustiniani nor Su show or suggest either of these counts, their combination does not show or suggest the transition score of claim 1.

Since the combination of Su, Boman and Giustiniani does not show or suggest the semantic score or the transition score of claim 1, it does not show or suggest the invention of claim 1 or claims 2 and 5-18, which depend therefrom.

CLAIM 5

Claim 5 is additionally patentable over Su. Under claim 5, using semantic entities to form a candidate semantic structure comprises including semantic entities in the candidate semantic structure that are not identified from the text. Su does not show or suggest this and in fact requires each semantic tag in an upper phrase level to be percolated up from a lower phrase level. This is shown in FIG. 5 and is discussed in column 15, lines 21-40. Thus, Su does not show or suggest using semantic entities in a candidate semantic structure that are not identified from the text.

CLAIM 6

Claim 6 is additionally patentable over claim 5. Under claim 6, generating a semantic score comprises using a penalty factor to discount a probability of a semantic entity if the semantic entity was not identified from the text. In the Office Action, it was asserted that column 2, lines 49-66, column 18, lines 50-61, and column 3, line 63 to column 4, line 3 of Su showed this limitation. However, in the cited sections, there is no mention of a penalty factor and no mention of a penalty factor that is used to discount a probability of a semantic entity if the semantic entity is not identified from text. As such, claim 6 is additionally patentable over Su.

CLAIM 11

Claim 11 is additionally patentable over Su. Under claim 11, the semantic structures are formed based on relationships between semantic entities that are defined in a schema. In claim 11, this is accomplished by constructing a table with an entry that is indexed by two semantic entities and that contains a set of semantic structures found in the schema. The table is searched using the two semantic entities to locate the set of semantic structures and a semantic structure is formed for each of the semantic structures in the set of semantic structures. Su does not show or suggest constructing a table with an entry that is indexed by two semantic entities. In the Office Action, column 18, lines 50-61 was said to show an entry that is indexed by two semantic entities and that contains a set of semantic structures found in the schema.

However, the cited paragraph makes no mention of a table with an entry that is indexed by two semantic entities.

CLAIMS 19-26 AND 29-31

Claims 19-26 and 29-31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Su in view of Boman.

Claim 19 provides a computer-readable medium having computer-executable instructions for performing steps. The steps include identifying semantic entities from a text by creating semantic nodes and adding semantic entities identified from the text to the semantic nodes. A set of partial semantic structures is formed from the semantic entities at a semantic node. Each of the partial semantic structures is scored to provide a score for each partial semantic structure. At least one partial semantic structure is pruned and at least one partial semantic structure is retained based on the scores for the partial semantic structures. A full semantic structure is formed from a retained partial semantic structure and semantic entries in a semantic node. A determination is made that there are no more semantic nodes to process. A further determination is made that the full semantic structure is not a command semantic structure. The full semantic structure is then placed in multiple command semantic structures after determining there are no more semantic nodes to process and after determining that the full semantic structure is not a command semantic structure. Each command semantic structure is scored and one of the command semantic structures is selected based on the scores.

The amendments to claim 19 find support in the specification on page 13, line 18 to page 14, line 3 and page 28, line 11 to page 29, line 2.

As amended, claim 19 is not shown in the combination of Su and Boman. In particular, neither reference shows or suggests placing a full semantic structure in multiple command semantic structures after determining there are no more semantic nodes to process and after determining that the full semantic structure is not a command semantic structure. In the Office Action of September 26, 2007, it was asserted that since Su teaches various structures used during parsing and analysis and Boman teaches distinguishing a command from program

content during parsing and analysis, the combined teaching of Su and Boman render the placement of a full semantic structure within multiple command structures after deciphering between command and content obvious. Applicants respectfully dispute this assertion.

Under Su, once all of the semantic nodes have been processed, no further processing is performed and there is no indication that a semantic structure is placed into multiple command semantic structures. Similarly, in Boman, there is no suggestion of a full semantic structure being placed in multiple command semantic structures after determining that there are no more semantic nodes to process and after determining that the full semantic structure is not a command semantic structure.

Under Boman, the only semantic structures provided are frames 50. During parsing, certain frames are identified based on keywords found in the text. In addition, slots within the frames are filled with certain keywords. If there is ambiguity about which frame to select, Boman teaches that a decision tree should be used to resolve the ambiguity. (See column 5, lines 41-58). Alternatively, Boman mentions using a dialog manager to prompt the user to supply additional information to specify either program content or a meta command. However, even if these actions are taken, there is no mention in Boman for placing a full semantic structure in multiple command structures after determining that a full semantic structure is not a command semantic structure. In other words, after Boman determines that there is an ambiguity, Boman does not take one of the frames 50 and place it within another frame representing a command semantic structure. Instead, Boman either selects one of the frames using the decision tree or obtains more information, which, assumably, is inserted into one of the frames to remove the ambiguity. Since Boman does not place one of the frames into another frame, it does not place a full semantic structure into multiple command semantic structures after determining that the full semantic structure is not a command semantic structure.

Since neither Su nor Boman show or suggest placing a full semantic structure in multiple command semantic structures after determining there are no more semantic nodes to process and after determining that the full semantic structure is not a command semantic

structure, their combination does not show or suggest the invention of claim 19 or claims 20-26 and 29-31, which depend therefrom.

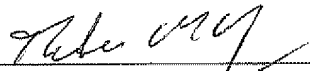
CONCLUSION

In light of the above remarks, claims 1, 2, 5-26 and 29-31 are in form for allowance. Reconsideration and allowance of the claims is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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